

To: Harris County Precinct Two Commissioner Adrian Garcia
From: Amber Weed, Interim Director; Ramin Naderi, Analyst
CC: Mike Lykes, Mercedes Sánchez, Kris Banks, and Matt Garry with
Precinct Two; Barbie Robinson, Jennifer Kiger, and Dr. Ericka Brown
with Harris County Public Health
Date: March 14, 2022
Re: **Quarterly Memo on COVID-19 Vaccine Distribution, March 2023**

EXECUTIVE SUMMARY

In January 2021, Precinct Two requested the Analyst's Office produce a monthly memo regarding the distribution of COVID-19 vaccinations in Harris County. As of July 2022, this memo is released quarterly, a change from the previous monthly schedule in response to the slowing changes in vaccine distribution.

This memo provides an overview of the COVID-19 pandemic and vaccine distribution in Harris County. Key findings from the data in this memo include:ⁱ

- As of February 26, 2023, **64.2% (3,037,846) of individuals in Harris County were fully vaccinated.**
- As of February 26, 2023, **10.6% (499,781) of individuals in Harris County were partially vaccinated.**
- As of February 26, 2023, **26.2% (1,241,668) of individuals in Harris County had received at least one booster shot, a 3.1% increase** (from 1,203,830 to 1,241,668) from November 27, 2022.
- As of February 26, 2023, **9.2% (433,307) of individuals in Harris County had received a bivalent booster shot.**
- Between November 29, 2022, and February 28, 2023, **the number of individuals in Harris County vaccinated with at least one dose increased by 0.4%** (from 3,522,588 to 3,537,627).
- Between November 29, 2022, and February 26, 2023, **the number of individuals in Harris County fully vaccinated increased by 0.3%** (from 3,028,468 to 3,037,846).
- **Zip codes 77336 and 77090 have the fewest number of individuals per 100,000 residents fully vaccinated** (40,385 and 44,874 respectively).
- **Zip codes 77019 and 77098 have the greatest number of individuals per 100,000 residents fully vaccinated** (98,379 and 99,326 respectively).ⁱⁱ

ⁱ IMPORTANT NOTE: Not all data sums to totals reported. This is due to poor and inconsistent data reporting by providers, and because patients have not been required to disclose all demographic data. The Texas Department of State Health Services (DSHS) reports it is actively conducting county and provider-level analyses to identify if certain providers or areas are underreporting more than others for targeted data entry funding and training.

ⁱⁱ Zip code analysis excludes zip codes that report a greater number of residents vaccinated than the zip code's total population. This discrepancy is due to poor and limited data.

- The median of the median incomes of the fifteen Harris County zip codes with **the fewest number of individuals per 100,000 residents fully vaccinated is \$56,927.**
- The median of the median incomes of the fifteen Harris County zip codes with **the greatest number of individuals per 100,000 residents fully vaccinated is \$98,727.**
- The number of individuals fully vaccinated in Harris County varies by age group.
 - **84.3% (161,948) of individuals ages 75 and over are fully vaccinated;**
 - **87.0% (497,170) of individuals ages 60-74 are fully vaccinated;**
 - **82.5% (693,878) of individuals ages 45-59 are fully vaccinated;**
 - **72.5% (760,913) of individuals ages 30-44 are fully vaccinated;**
 - **62.6% (773,555) of individuals ages 12-29 are fully vaccinated;**
 - **27.3% (130,088) of individuals ages 5-11 are fully vaccinated; and,**
 - **5.8% (20,287) of individuals ages 0-4 are fully vaccinated.**
- The number of individuals fully vaccinated in Harris County varies by race and ethnicity.ⁱⁱⁱ
 - **38.9% (344,734) of individuals who identify as Black are fully vaccinated;**
 - **54.9% (1,117,978) of individuals who identify as Hispanic/Latino are fully vaccinated;**
 - **49.6% (649,147) of individuals who identify as White are fully vaccinated;**
 - **59.1% (205,631) of individuals who identify as Asian American/Pacific Islander are fully vaccinated; and,**
 - **57.6% (4,861) of individuals who identify as American Indian/Alaskan Native are fully vaccinated.**
- The demographic in Harris County with the **highest percentage of individuals vaccinated are individuals who identify as Hispanic ages 65-74 (85%).** The demographic with the **lowest percentage of individuals vaccinated are individuals who identify as American Indian/Alaskan Native ages 0-4 (2%).**
- Between January 1, 2020, and February 28, 2023:
 - **All providers in Harris County administered a cumulative 11,368,191 COVID-19 PCR tests;^{iv}**
 - **There were 1,003,077 positive COVID-19 cases confirmed by a PCR test in Harris County; and,**
 - **There were 8,616 confirmed COVID-19-related deaths in Harris County.**

The Analyst's Office acknowledges Harris County Public Health and the Harris County Office of Management and Budget for their significant contributions to this memo.

ⁱⁱⁱ In April 2022, DSHS experienced large-scale corrections from providers to patient profiles stored in the ImmTrac2 system, including corrections to patient race and ethnicity. The corrections by DSHS impacted race and ethnicity data reported in this memo. For example, percentages of individuals of specific races and ethnicities may show reductions in percentage vaccinated from the Analyst's Office May 2022 memo.

^{iv} PCR refers to the polymerase chain reaction or nucleic acid amplification tests commonly used to test for COVID-19.

INTRODUCTION

In January 2021, Precinct Two requested the Harris County Commissioners Court's Analyst's Office (the "Analyst's Office") produce a monthly memo regarding the distribution and administration of COVID-19 vaccinations in Harris County. As of July 2022, this memo is released quarterly, a change from the previous monthly schedule in response to the slowing changes in vaccine distribution.

This memo includes data and analysis regarding COVID-19 testing, cases, deaths, and vaccine administration in Harris County. Precinct-level age, race, and ethnicity data are provided where available.

METHODOLOGY

Data utilized in this memo are from Harris County Public Health (HCPH); the Centers for Disease Control and Prevention (CDC); and Harris County's Applied Technologies Location Analysis and Statistics (ATLAS) System. Data reflect COVID-19 vaccine doses administered in Harris County by all providers from the beginning of the vaccine rollout, December 14, 2020, through February 28, 2023, and all testing, confirmed cases, and COVID-19-related death data from January 1, 2020, through February 28, 2023.

Data Collected from Harris County Public Health (HCPH)

Harris County Public Health (HCPH) is the primary data source for this memo. HCPH staff analyzes vaccine data received by the Texas Department of State Health Services' (DSHS) ImmTrac2 system. As the Local Health Authority for the County, HCPH also analyzes and receives testing, confirmed cases, and COVID-19-related death data from local health providers (including the City of Houston) and other sources. Income data provided by HCPH reflects the American Community Survey, 2016-2020 Five-Year Estimates. HCPH data and/or analysts aid in the development of all tables and figures.

DSHS advised the following via email regarding the data available on ImmTrac2:

- Providers in Texas have up to 24-hours to report doses administered in ImmTrac2, and the dashboard is updated by 4:00 pm with data reported as of 11:59 pm the previous night. This means there could be as much as a 48-hour lag between when a dose is administered and when it appears on ImmTrac2.

In April 2022, DSHS experienced large-scale corrections from providers to patient profiles stored in the ImmTrac2 system, including corrections to patient race and ethnicity data. DSHS reported a noticeable shift in patient demographics as a result of the corrections. For example, more patients identified as "multiracial" in DSHS following the corrections—patients may have previously been identified as belonging to a singular race/ethnic group rather than as "multiracial."¹ Demographic-level analysis in the Analyst's Office May 2022 memo differs from previous versions. DSHS notes that no change was made to how data is gathered or stored in the ImmTrac2 system, and another large-scale correction is unlikely to occur again.²

In January 2023, DSHS data indicated a decrease in the total number of fully vaccinated individuals in Harris County (a decrease of 839 individuals) from the

previous month. According to the response given to HCPH from DSHS, the decrease was likely “due to the change in the Immtrac patient profiles” and that the decrease observed “could be feasible with patient and vaccine deduplication and reassigning of the jurisdiction.”³

On November 3, 2021, new boundaries for commissioner precincts, adopted by the Harris County Commissioners Court, went into effect. This memo incorporates the new commissioner precinct boundaries. As such, precinct-level analysis will differ from previous versions prior to the December 2021 memo.

Data Collected from Centers for Disease Control and Prevention (CDC)

The Analyst’s Office collected information on social vulnerability from the Centers for Disease Control and Prevention (CDC). Social vulnerability refers to a community’s capacity to prepare for and respond to the stress of hazardous events ranging from natural disasters, such as tornadoes or disease outbreaks, to human-caused threats, such as toxic chemical spills. The Social Vulnerability Index (SVI) was created by the CDC and depicts the social vulnerability of communities, at the census tract level, within a given county.⁴ SVI groups fifteen census-derived factors into four themes that summarize the extent to which the area is socially vulnerable to disaster. The factors include economic data as well as data regarding education, family characteristics, housing, language ability, ethnicity, and vehicle access. Overall Social Vulnerability Index combines all the variables to provide a comprehensive assessment. SVI data aided with the development of **Table 2**.

Data Collected from Applied Technologies Location Analysis and Statistics (ATLAS)

The Analyst’s Office collected commissioner precinct zip code data from Harris County’s Applied Technologies Location Analysis and Statistics (ATLAS) System. As with data provided by Harris County Public Health, information collected from ATLAS reflects the commissioner precinct boundaries that went into effect on November 3, 2021.

Data Collected from Harris County Office of Management and Budget

The Analyst’s Office collected commissioner precinct race and ethnicity data from the Harris County Office of Management and Budget (OMB). As with data provided by Harris County Public Health, data collected from OMB reflects the commissioner precinct boundaries that went into effect on November 3, 2021.

NOTE: All analyses in this memo, except **Figure 3**, reflect *individuals fully vaccinated*, rather than *individuals with at least one dose*.

Prior versions of this memo used population statistics for Harris County from the 2019 American Community Survey (ACS) 1-Year Estimates. All data in this memo uses population estimates from the 2020 Census, except **Table 3**, **Figure 4**, and **Figure 5**, which use 2019 ACS estimates.

⁴ Centers for Disease Control (CDC) Social Vulnerability Index, a tool to identify socially vulnerable communities.

BACKGROUND

The spread of the novel coronavirus, the cause of COVID-19, began in the United States in early 2020. Since then, local health entities have tracked the testing, the number of confirmed positive cases, and deaths related to COVID-19.

The distribution of vaccine for COVID-19 commenced in December 2020. The following is a timeline of the release of the COVID-19 vaccine and the changing eligibility for the vaccine in the United States and Texas.

Timeline for Vaccine Distribution

- In December 2020, two-dose vaccines from two producers, Moderna and Pfizer-BioNTech, were authorized for emergency use by the US Food and Drug Administration (FDA).
- In February 2021, the FDA authorized Johnson & Johnson's (J&J) one-dose vaccine for emergency use.
- From December 2020 to March 28, 2021, vaccines were made available for individuals in the Texas Department of State Health Services' (DSHS) Phase 1A (front-line healthcare workers and residents of long-term care facilities) and 1B (individuals ages 65+ and individuals ages 16+ with "at least one chronic medical condition that puts them at increased risk for severe illness from the virus that causes COVID-19").^{vi vii}
- On March 29, 2021, Texas expanded vaccine eligibility to all individuals ages 16 and older.
- Beginning May 12, 2021, Texas expanded vaccine eligibility to all individuals ages 12 and older.
- On August 23, 2021, the FDA granted full approval for the Pfizer-BioNTech vaccine for those 16 and older, with continued availability for those 12-15 years of age under emergency use authorization.
- On October 29, 2021, the FDA authorized the emergency use of the Pfizer-BioNTech vaccine to include children five years through 11 years of age.⁴
- The FDA granted full approval of the Moderna vaccine to those 18 and older on January 31, 2022.⁵
- On June 17, 2022, the FDA authorized the emergency use of the Pfizer-BioNTech vaccine for children six months through four years of age and the Moderna vaccine in children six months through 17 years of age.⁶
- On July 13, 2022, the FDA authorized the emergency use of the Novavax COVID-19 Vaccine, Adjuvanted for those 18 and older.⁷ On August 19, 2022, the FDA authorized the emergency use of the Novavax COVID-19 Vaccine, Adjuvanted for those 12-17 years of age.⁸

To incentivize unvaccinated residents to seek vaccination, Harris County and the City of Houston launched separate cash card incentive programs for individuals to receive their first vaccine dose in summer 2021. The Harris County program was launched on August 17, 2021, and offered \$100 cash cards to residents who received their first dose of the COVID-19 vaccine from August 17 to September 30, at any authorized provider in the County.⁹ Similarly, the City of Houston launched a cash card incentive

^{vi} Department of State Health Services (DSHS) COVID-19 Vaccine Allocation Phase 1 Definition.

^{vii} Department of State Health Services (DSHS) COVID-19 Vaccine Allocation Phase 1B Definition.

program on August 26, 2021, stating that the first 20,000 individuals to get fully vaccinated at an eligible health department site would receive \$150 in the form of cash cards; \$100 cash card for their first dose, and an additional \$50 cash card for their second dose.¹⁰ These two incentive programs concluded in September 2021.

Following the initial release of vaccine, waning immunity among early recipients prompted recommendation for boosters. The Centers for Disease Control and Prevention (CDC) considers an individual “fully vaccinated” against COVID-19 two weeks after the completion of a two-dose vaccine or one-dose vaccine.¹¹ The CDC’s current definition for “fully vaccinated” excludes any additional shots (or “booster” shots) administered for COVID-19. The CDC considers individuals “up to date” if they have received all doses in the primary series and all boosters recommended, when eligible.^{viii 12}

Timeline for Boosters

- On August 12, 2021, the FDA amended the emergency use authorizations for the Moderna and Pfizer-BioNTech vaccines to allow for an additional third dose, a “booster,” to be administered to immunocompromised individuals.¹³
- On September 22, 2021, the FDA amended the emergency use authorization for the Pfizer-BioNTech COVID-19 Vaccine to allow for use of a single booster dose in certain populations.^{14 ix}
- On October 20, 2021, the FDA further expanded the emergency use authorization to permit single-dose booster shots of the Moderna and Johnson & Johnson COVID-19 vaccines.^{15 x}
- On November 19, 2021, the FDA amended the emergency use authorization of both the Moderna and Pfizer-BioNTech vaccines, allowing for a single dose booster to all individuals 18 years or older, after completion of primary vaccination with an FDA-authorized or approved COVID-19 vaccine.¹⁶
- On March 29, 2022, the FDA authorized a second booster dose of either the Pfizer-BioNTech or Moderna vaccine to be administered to those individuals 50 years or older and certain immunocompromised individuals.¹⁷
- On May 17, 2022, the FDA amended the emergency authorization use of the Pfizer-BioNTech vaccine, authorizing a single booster dose for individuals 5-11 years of age, at least five months after completing the primary series with the Pfizer-BioNTech vaccine.¹⁸
- On August 31, 2022, the FDA amended the emergency use authorization of the Moderna and Pfizer-BioNTech vaccines, authorizing bivalent formulations of the vaccines for use as a single booster vaccination, referred to as “updated boosters,” at least two months following primary or booster vaccination.¹⁹ The Moderna COVID-19 Vaccine, Bivalent is authorized for individuals 18 years or older, while the Pfizer-BioNTech COVID-19 Vaccine, Bivalent is authorized for individuals 12 years or older.²⁰

^{viii} Primary series is defined as receipt of two doses for the Pfizer-BioNTech, Moderna, and Novavax vaccine or one dose of the Johnson & Johnson’s Janssen vaccine.

^{ix} Pfizer-BioNTech boosters were authorized for individuals 65 years of age and older; individuals 18 through 64 years of age at high risk of severe COVID-19; and individuals 18 through 64 years of age whose frequent institutional or occupational exposure to SARS-CoV-2 puts them at high risk of serious complications of COVID-19 including severe COVID-19.

^x Moderna boosters are available for individuals 65 years of age and older; individuals 18 through 64 years of age at high risk of severe COVID-19; and individuals 18 through 64 years of age with frequent institutional or occupational exposure to SARS-CoV-2. Johnson & Johnson boosters are available for individuals 18 years of age and older.

- On October 12, 2022, the FDA amended the emergency use authorization of the Moderna COVID-19 Vaccine, Bivalent, allowing the vaccine to be administered to individuals 6 through 17 years of age. The FDA also amended the emergency use authorization of the Pfizer-BioNTech COVID-19 Vaccine, Bivalent to be administered to individuals 5 through 11 years of age.²¹
- On October 19, 2022, the FDA issued an emergency use authorization for the Novavax COVID-19 Vaccine, Adjuvanted, which allows a first booster of the Novavax Vaccine to individuals 18 years and older for whom an FDA-authorized mRNA bivalent COVID-19 booster is not accessible or clinically appropriate, as well as to individuals 18 years and older who elect to receive the Novavax COVID-19 Vaccine, Adjuvanted.²²
- On December 8, 2022, the FDA amended the emergency use authorizations of the Moderna COVID-19 vaccine, Bivalent, and the Pfizer-BioNTech COVID-19 Vaccine, Bivalent, allowing the vaccines to be administered to individuals six months of age and older.²³

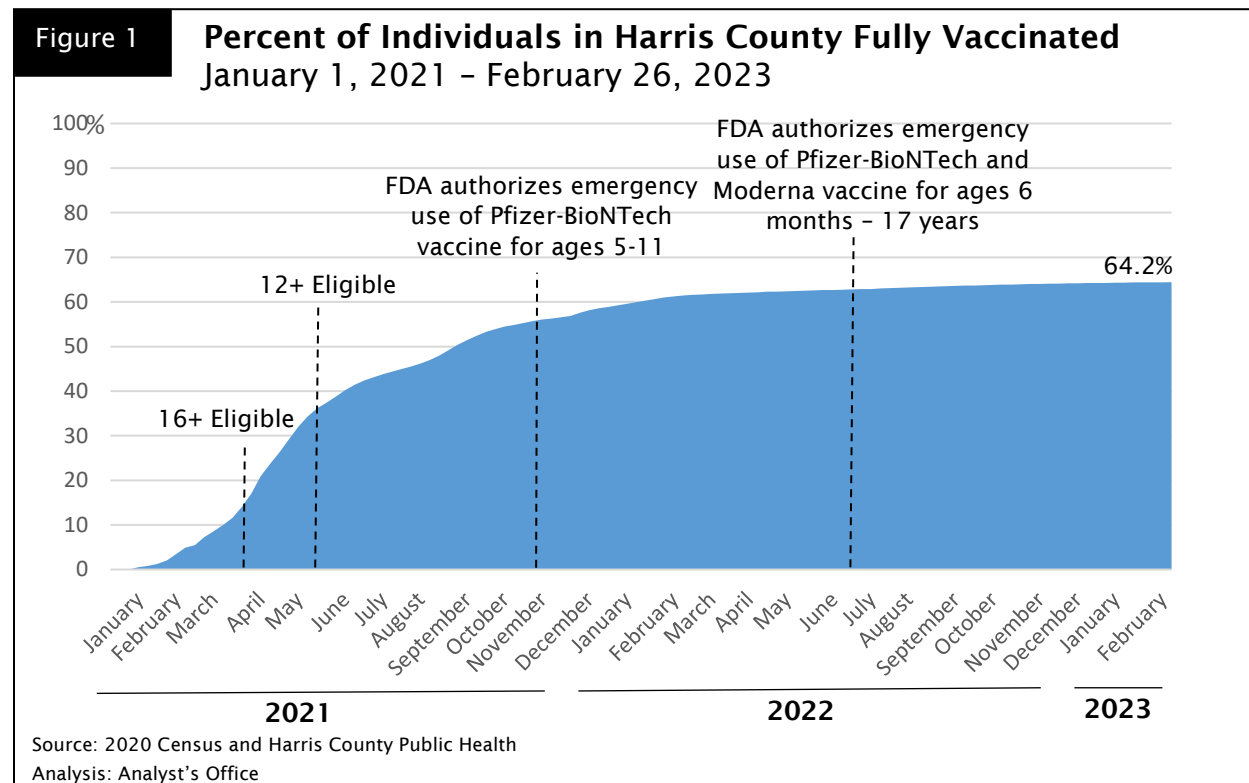
Table 1 summarizes COVID-19 vaccine approvals by the FDA since December 2020.

Table 1 US Food and Drug Administration (FDA) Vaccine Approvals December 2020 – February 2023					
Manufacturer	Emergency Authorization Date/Approval Age	Full FDA Approval Granted	FDA Booster Authorization Date for All Adults (18+)	Booster Emergency Authorization Date/Approval Age	FDA 2nd Booster Dose Authorization Date
Pfizer-BioNTech	12/11/2020 (16+ years) 5/10/2021 (12-15 years) 10/29/2021 (5-11 years) 6/17/2022 (6 months - 4 years)	8/23/2021 (16+ years)	Booster: 11/19/2021 Bivalent: 8/31/2022	Booster: 5/17/2022 (5-11 years) Bivalent: 8/31/2022 (12+ years) 10/12/2022 (5-11 years) 12/8/2022 (6 months+)	3/29/2022 (For 50+ years and immunocompromised)
Moderna	12/18/2020 (18+ years) 6/17/2022 (6 months - 17 years)	1/31/2022 (18+ years)	Booster: 11/19/2021 Bivalent: 8/31/2022	Booster: 10/12/2022 (6-17) Bivalent: 12/8/2022 (6 months+)	3/29/2022 (For 50+ years and immunocompromised)
Johnson & Johnson	2/27/2021 (18+ years)	Not currently granted	10/20/2021	Not currently granted	Not currently granted
Novavax COVID-19 Vaccine, Adjuvanted	7/13/2022 (18+ years) 8/19/2022 (12 - 17 years)	Not currently granted	10/19/2022	Not currently granted	Not currently granted

Source: US Food and Drug Administration
Analysis: Analyst's Office

INDIVIDUALS IN HARRIS COUNTY FULLY VACCINATED

Figure 1 presents the percentage of Harris County individuals fully vaccinated between January 1, 2021, and February 26, 2023.^{xi} This figure includes individuals vaccinated by Harris County Public Health (HCPH) and all other providers. HCPH reports countywide data regarding individuals fully vaccinated by week—the data presented below extends through the week of February 20 – February 26, 2023.



On March 29, 2021, as shown in **Figure 1**, Texas expanded vaccine eligibility to all individuals ages 16 and older. Beginning May 12, 2021, Texas expanded vaccine eligibility to all individuals ages 12 and older. On October 29, 2021, the FDA authorized the emergency use of the Pfizer-BioNTech vaccine to include children 5 through 11 years of age.²⁴

As of February 26, 2023, 64.2% (3,037,846) of all individuals in Harris County were fully vaccinated, meaning an individual has received both doses of either the Moderna, Pfizer-BioNTech, or Novavax COVID-19 Vaccine, Adjuvanted vaccines or a single dose of the Johnson & Johnson vaccine.^{xii} This reflects a 0.3% increase (from 3,028,468 to 3,037,846) from November 29, 2022 (the prior memo). As of February 26, 2023, a total of 10.6% (499,781) of all individuals in Harris County were partially vaccinated—and 26.2% (1,241,668) of individuals received at least one booster shot, a 3.1% increase (from 1,203,830 to 1,241,668) from November 27, 2022, (the prior memo). In addition,

^{xi} Individuals who are partially vaccinated and individuals fully vaccinated are mutually exclusive, meaning individuals partially vaccinated only includes individuals who have received one vaccine dose of a two-dose shot (Pfizer or Moderna), and individuals fully vaccinated include individuals who have received either the Johnson & Johnson vaccine or two vaccine doses of Pfizer or Moderna.

^{xii} Figure assumes Harris County's total population is 4,731,145, per the US Census Bureau's 2020 Decennial Census.

as of February 26, 2023, 9.2% (433,307) of individuals in Harris County had received a bivalent booster shot.

NUMBER OF INDIVIDUALS PER 100,000 RESIDENTS FULLY VACCINATED BY ZIP CODE

Table 2 presents the number of individuals per 100,000 residents fully vaccinated by zip code. The table also includes the median income, Social Vulnerability Index (SVI) score, and commissioner precinct for each zip code.^{xiii} Commissioner precinct boundaries do not align with zip code boundaries; some zip codes are in multiple precincts.^{xiv} Precincts are listed in order of the greatest to least percentage of zip code land mass within the precinct.

Social vulnerability describes a community's ability to prevent human suffering and financial loss in the event of a disaster (such as a hurricane or disease outbreak).^{xv} SVI rankings are based on percentiles ranging from 0 to 1 (with higher values indicating greater vulnerability). SVI data is often presented using quartile classification. This analysis utilizes the CDC's SVI classifications as follows: 0-0.25 (lowest vulnerability); 0.25-0.5 (moderate low); 0.50-0.75 (moderate high); and 0.75-1 (highest vulnerability).

Table 2 ranks zip codes within Harris County to show relative vulnerability in comparison with the rest of Harris County. The median of the median incomes of the fifteen Harris County zip codes with the **fewest number of individuals per 100,000 residents fully vaccinated is \$56,927**. The median of the median incomes of the fifteen Harris County zip codes with the **greatest number of individuals per 100,000 residents fully vaccinated is \$98,727**.^{xvi}

This analysis excludes zip codes 77027, 77010, 77024, 77030, 77056, 77507, 77523, 77046, and 77498 because they report higher vaccinated populations than the reported zip code population. HCPH suggests that this is likely due to the low population relative to other zip codes, which means measured parameters are sensitive to bad data such as data entry errors, individuals using business addresses in lieu of a home residence, and other factors. Additionally, in October 2022, DSHS changed their geocoder parameters which associates zip codes with counties. This change resulted in the exclusion of zip codes previously included in this analysis—the new DSHS geocoder parameters assessed the landmass of previously included zip codes that overlap with Harris County to be too small to include going forward. This change impacted zip codes 77365, 77382, 77477, 77484, 77489, 77494, 77546, and 77581. For a full list of zip codes, see **Appendix D**.

^{xiii} The May 2022 memo includes median income data taken from the 2016-2020 ACS Five-Year Estimates. Median income data provided in previous iterations of this memo were taken from the 2015-2019 ACS Five-Year Estimates.

^{xiv} Zip codes are assigned to commissioner precincts in accordance with the November 3, 2021, commissioner precinct boundaries.

^{xv} Centers for Disease Control (CDC) SVI 2016 Documentation.

^{xvi} Analysis excludes zip codes with small percentage of land mass in Harris County and zip code 77507, which has no income data available.

Table 2

Number of Individuals Per 100,000 Residents Fully Vaccinated by Zip Code, Median Income, SVI, and Commissioner Precinct December 14, 2020 – February 28, 2023

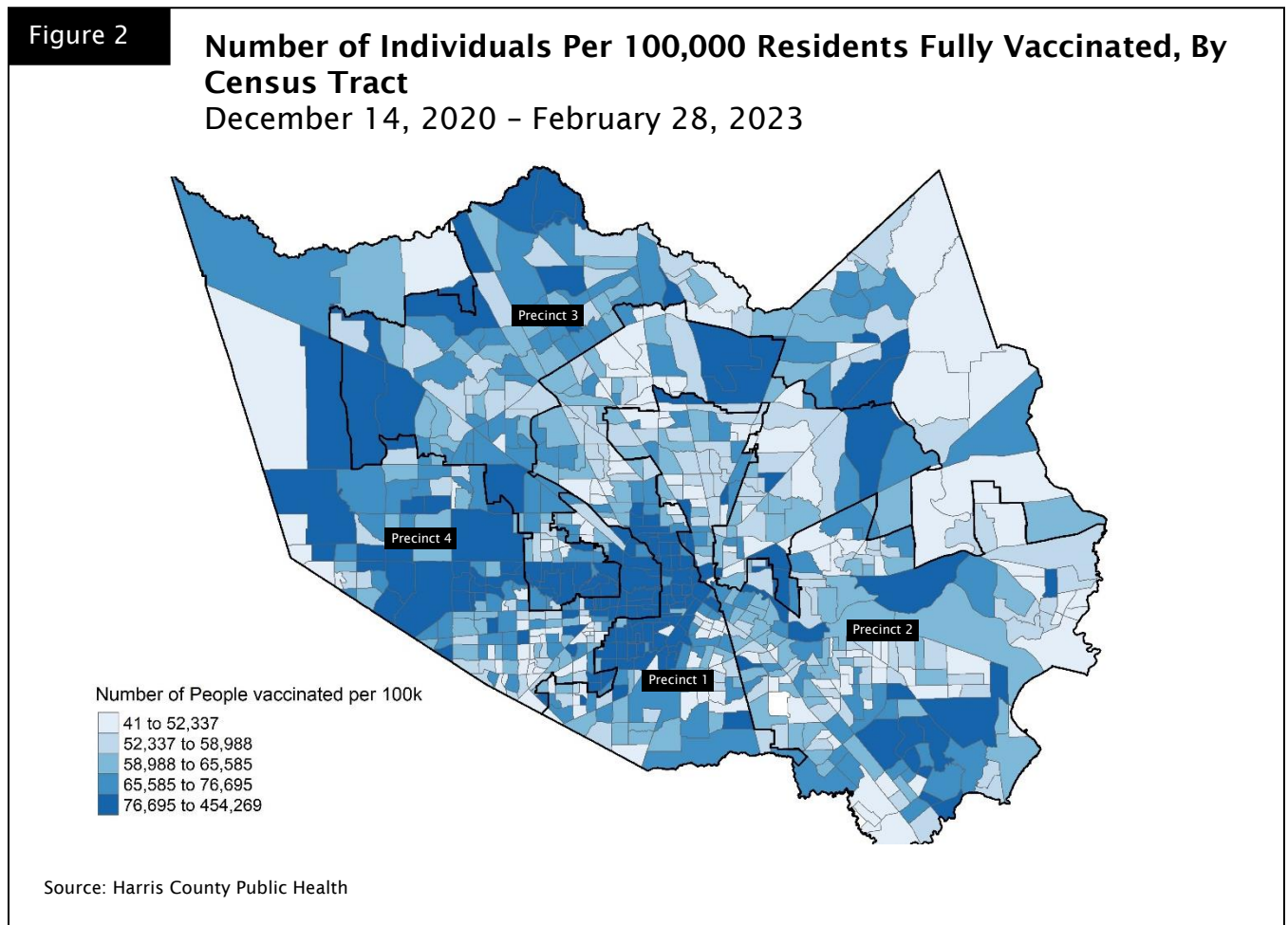
Zip Codes With Fewest Number of Individuals Per 100,000 Residents Fully Vaccinated				
Zip Code	Number Per 100k	Median Income	SVI	Commissioner Precinct(s)
77336	40,385	\$60,802	0.30	3
77090	44,874	\$41,441	0.70	1,3
77532	46,129	\$78,489	0.37	3,2
77562	46,383	\$56,927	0.63	2,3
77004	49,117	\$55,498	0.53	1
77520	49,649	\$51,165	0.82	2
77050	51,103	\$33,537	0.71	1,2
77067	51,341	\$44,196	0.79	1
77530	51,395	\$63,155	0.59	2,3
77521	51,665	\$67,918	0.64	2,3
77503	52,173	\$57,584	0.82	2
77060	52,662	\$31,173	0.94	2,1
77571	53,042	\$77,709	0.38	2
77013	53,415	\$36,647	0.98	2,1
77536	54,264	\$77,163	0.44	2
Zip Codes With Greatest Number of Individuals Per 100,000 Residents Fully Vaccinated				
Zip Code	Number Per 100k	Median Income	SVI	Commissioner Precinct(s)
77009	73,818	\$61,296	0.62	2,1
77094	73,855	\$164,564	NA	4
77018	75,150	\$92,153	0.48	1
77083	76,034	\$54,360	0.53	4
77006	78,292	\$79,808	0.09	1
77025	79,018	\$72,207	0.32	1
77002	80,691	\$80,220	0.42	1,2
77008	82,838	\$121,408	0.08	1,4
77059	84,933	\$139,371	0.05	2
77007	85,568	\$129,703	0.01	4,1
77005	86,084	\$202,526	0.03	1
77032	89,058	\$33,630	0.99	1,2
77401	95,133	\$184,332	0.03	1
77019	98,379	\$116,032	0.09	4,1
77098	99,326	\$98,727	0.07	4,1

Highest Vulnerability
 Moderate High Vulnerability
 Lowest Vulnerability
 Moderate Low Vulnerability

Source: Population estimates from 2020 Census; income data from American Community Survey (ACS) 2020 5-Year Estimates downloaded from Harris County's Applied Technologies Location Analysis and Statistics (ATLAS); and SVI and vaccination rates from Harris County Public Health Analysis: Analyst's Office

NUMBER OF INDIVIDUALS PER 100,000 RESIDENTS FULLY VACCINATED BY CENSUS TRACT

Figure 2 presents the number of individuals per 100,000 Harris County residents fully vaccinated by census tract with Harris County commissioner precinct boundaries.^{xvii}



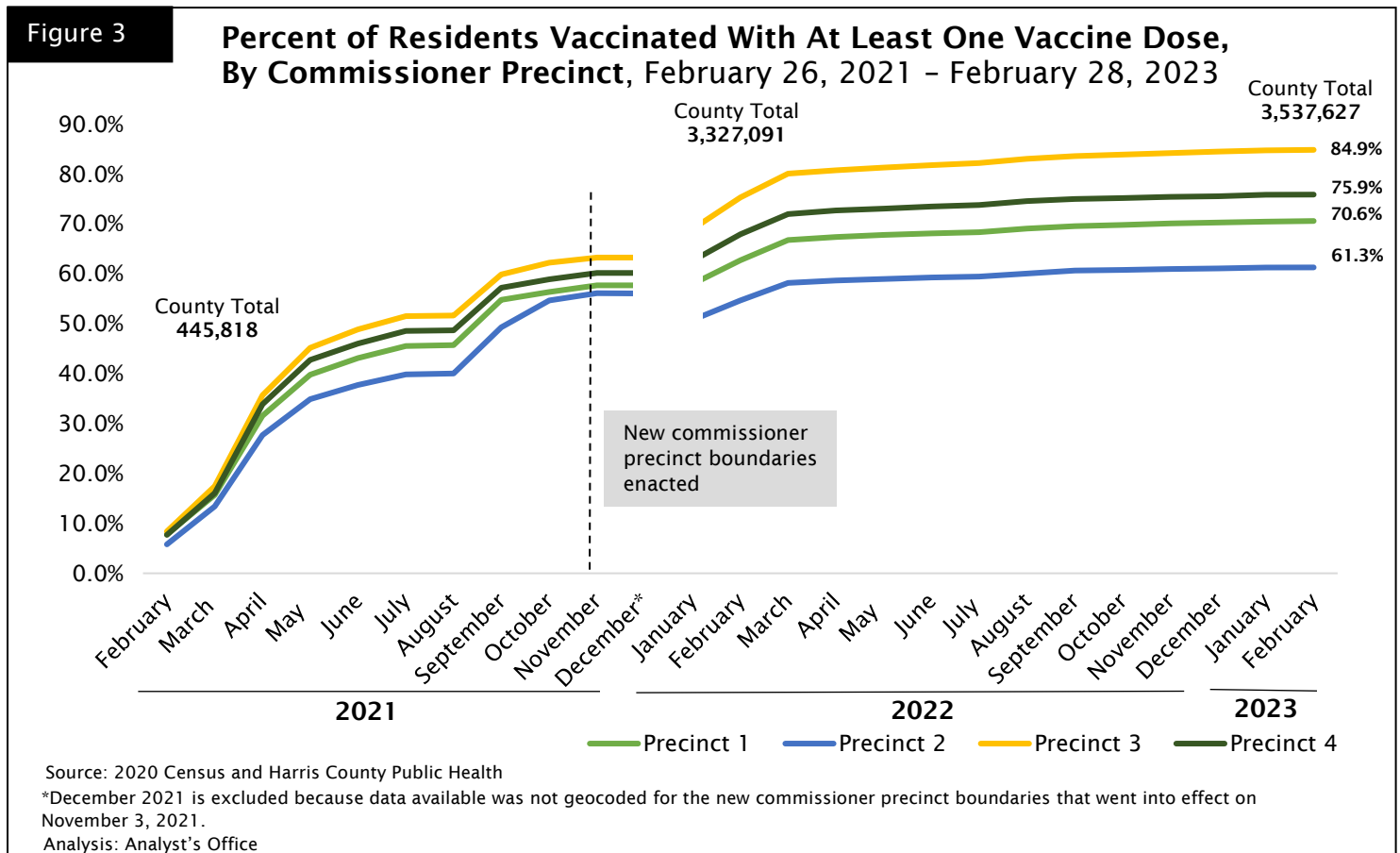
As of February 28, 2023, **64.2% (3,037,846)** of Harris County residents were fully vaccinated.^{xviii}

^{xvii} Commissioner precinct boundaries used reflect boundaries effective November 3, 2021.

^{xviii} Figure assumes Harris County population of 4,731,145 according to the 2020 Census.

PERCENT OF RESIDENTS VACCINATED WITH AT LEAST ONE DOSE BY COMMISSIONER PRECINCT

Figure 3 demonstrates the growth in the percent of residents vaccinated *with at least one dose* by commissioner precinct from February 26, 2021, through February 28, 2023, for all four Harris County commissioner precincts.^{xix}



Between February 26, 2021, and February 28, 2023, 74.8% (3,537,627) of individuals in Harris County were vaccinated with at least one vaccine dose.^{xx} There was an increase of 0.4% (from 3,522,588 to 3,537,627) between November 29, 2022 (the prior memo) and February 28, 2023, of individuals vaccinated with at least one dose.

As of February 28, 2023:^{xxi}

- **70.6% (835,617) of Precinct One residents** were vaccinated with at least one vaccine dose;
- **61.3% (725,206) of Precinct Two residents** were vaccinated with at least one vaccine dose;
- **84.9% (998,382) of Precinct Three residents** were vaccinated with at least one vaccine dose; and,
- **75.9% (902,274) of Precinct Four residents** were vaccinated with at least one vaccine dose.

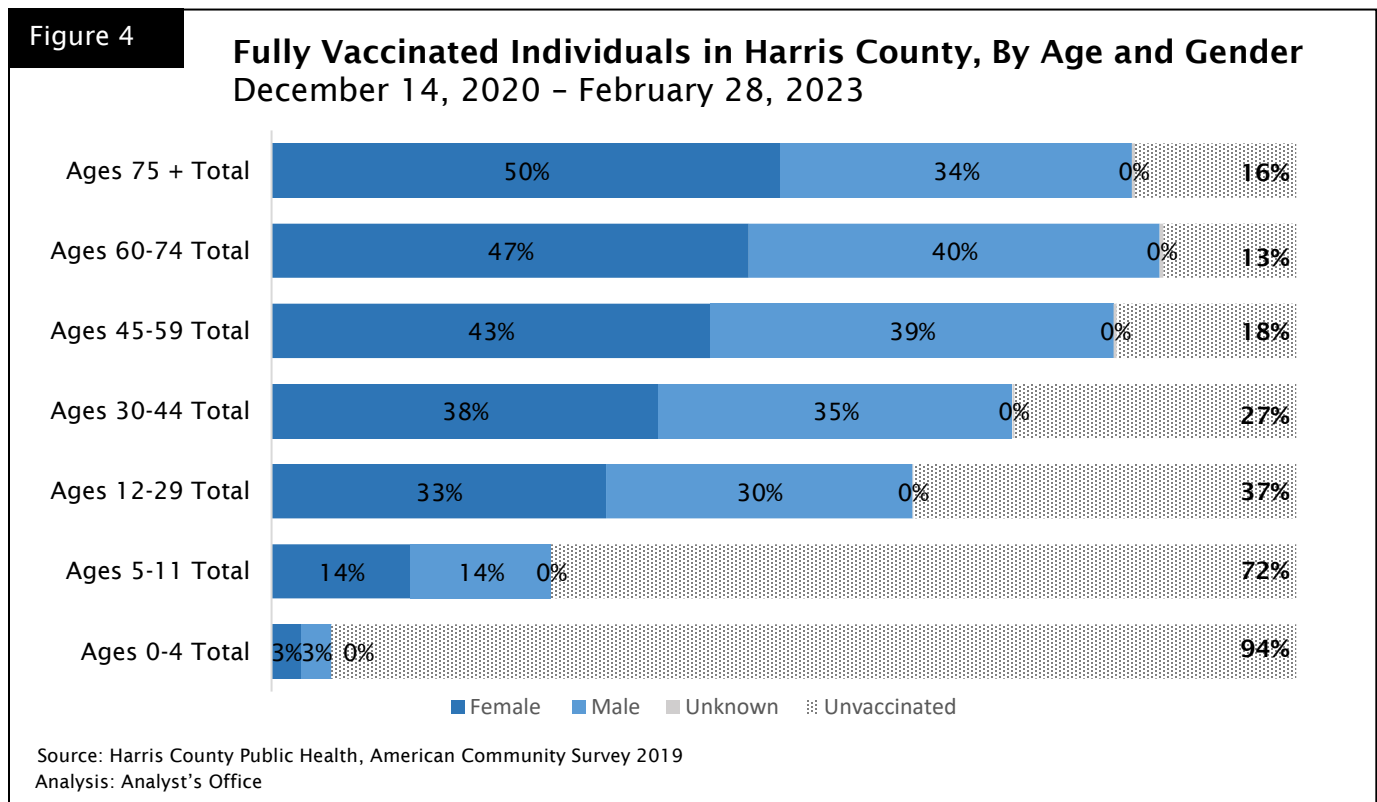
^{xix} Commissioner precinct boundaries used reflect boundaries effective November 3, 2021.

^{xx} Figure assumes Harris County's total population of 4,731,145, per the 2020 Census.

^{xxi} Precinct totals do not sum to County total because 76,148 individuals have addresses that cannot be geo-coded into a Precinct.

FULLY VACCINATED INDIVIDUALS BY AGE AND GENDER

Figure 4, and **Table 3**, which follows, reflect all individuals fully vaccinated by all providers in Harris County by the individual's age and gender. Each bar for each age group represents the age group's total population within Harris County's population and reflects the percentage of individuals in each age group vaccinated by gender.



Of the individuals who are fully vaccinated by a Harris County provider, 53% (1,595,049) are female; 47% (1,433,666) are male; and under 1% (9,124) are recorded as unknown gender.^{xxii} As shown in **Figure 4**, individuals ages 60-74 have the smallest percent of their age group who remain unvaccinated (13%), while individuals ages 0-4 have the largest percent of their age group who remain unvaccinated (94%).

^{xxii} Age and gender totals do not sum to the total number of fully vaccinated individuals due to some records having incomplete or incorrect data.

FULLY VACCINATED INDIVIDUALS BY AGE GROUP

Table 3 reflects all individuals fully vaccinated by all providers in Harris County by the individual's age group and includes the percentage of Harris County's total age group population vaccinated.^{xxiii} For context, **Table 3** also includes the percentage of Harris County's total population by age group.

Table 3 Fully Vaccinated Individuals in Harris County by Age Group December 14, 2020 – February 28, 2023			
Age Group	Number of Individuals Vaccinated	Percentage of Age Group Vaccinated ^{xxiv}	Percentage of Eligible County Population ^{xxv}
75+	161,948	84.3%	4.1%
60-74	497,170	87.0%	12.1%
45-59	693,878	82.5%	17.8%
30-44	760,913	72.5%	22.3%
12-29	773,555	62.6%	26.2%
5-11	130,088	27.3%	10.1%
0-4	20,287	5.8%	7.4%

Source: Harris County Public Health, American Community Survey 2019 1-Year Estimates
Analysis: Analyst's Office

As shown in **Table 3**:

- 84.3% (161,948) of individuals ages 75 and over are fully vaccinated;
- 87.0% (497,170) of individuals ages 60-74 are fully vaccinated;
- 82.5% (693,878) of individuals ages 45-59 are fully vaccinated;
- 72.5% (760,913) of individuals ages 30-44 are fully vaccinated;
- 62.6% (773,555) of individuals ages 12-29 are fully vaccinated;
- 27.3% (130,088) of individuals ages 5-11 are fully vaccinated; and,
- 5.8% (20,287) of individuals ages 0-4 are fully vaccinated.

^{xxiii} In April 2022, DSHS experienced large-scale corrections from providers to patient profiles stored in the ImmTrac2 system, including corrections to patient race and ethnicity. The corrections by DSHS impacted race and ethnicity data reported in this memo.

^{xxiv} Reflects the number of individuals in the age group who are fully vaccinated. Previous versions of this memo reflected the total age group fully vaccinated as a percentage of all individuals vaccinated.

^{xxv} Age group populations from American Community Survey 2019 data. Age groups 5-11 and 12-29 are estimated by the Analyst's Office due to data limitations.

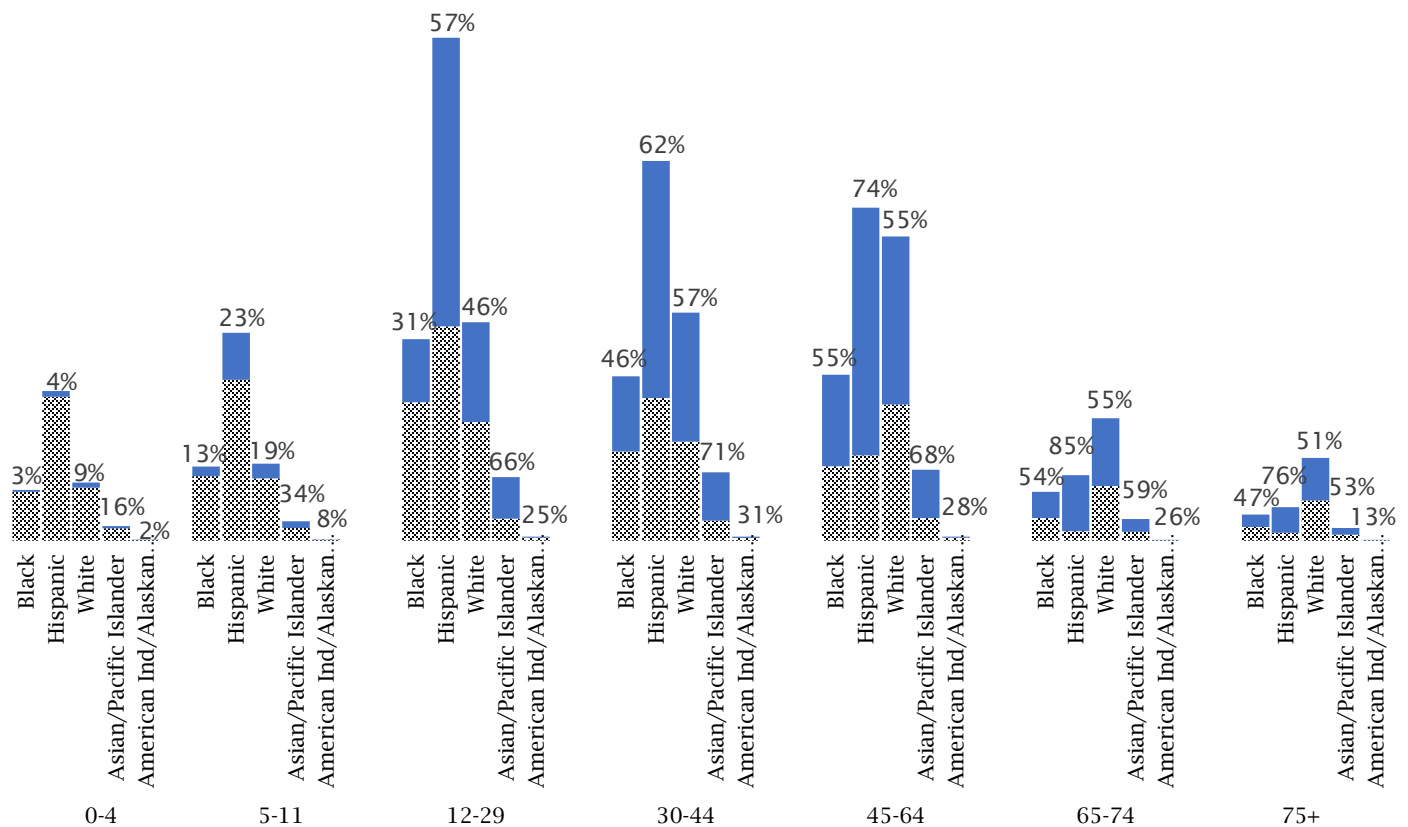
FULLY VACCINATED INDIVIDUALS BY RACE/ETHNICITY AND AGE GROUP

Figure 5 reflects all individuals fully vaccinated by all providers in Harris County by the individual's race and age group.^{xxvi xxvii} Each bar represents the percentage of individuals vaccinated for the given age range by race/ethnicity. The height of the bars reflects the given race/ethnicity group's proportion of the total population for the given age group.

Figure 5

Fully Vaccinated Individuals in Harris County, By Race/Ethnicity and Age Group

December 14, 2020 – February 28, 2023



Source: American Community Survey 2019 1-Year Estimates and Harris County Public Health
Analysis: Analyst's Office

■ Vaccinated ▨ Unvaccinated

^{xxvi} Note: Percentages for race and ethnicity data for "Other," "Unknown," and "Multi-Racial" population groups are not included as data for those groups are not captured in the same manner by the ACS Survey when compared to data provided by DSHS.

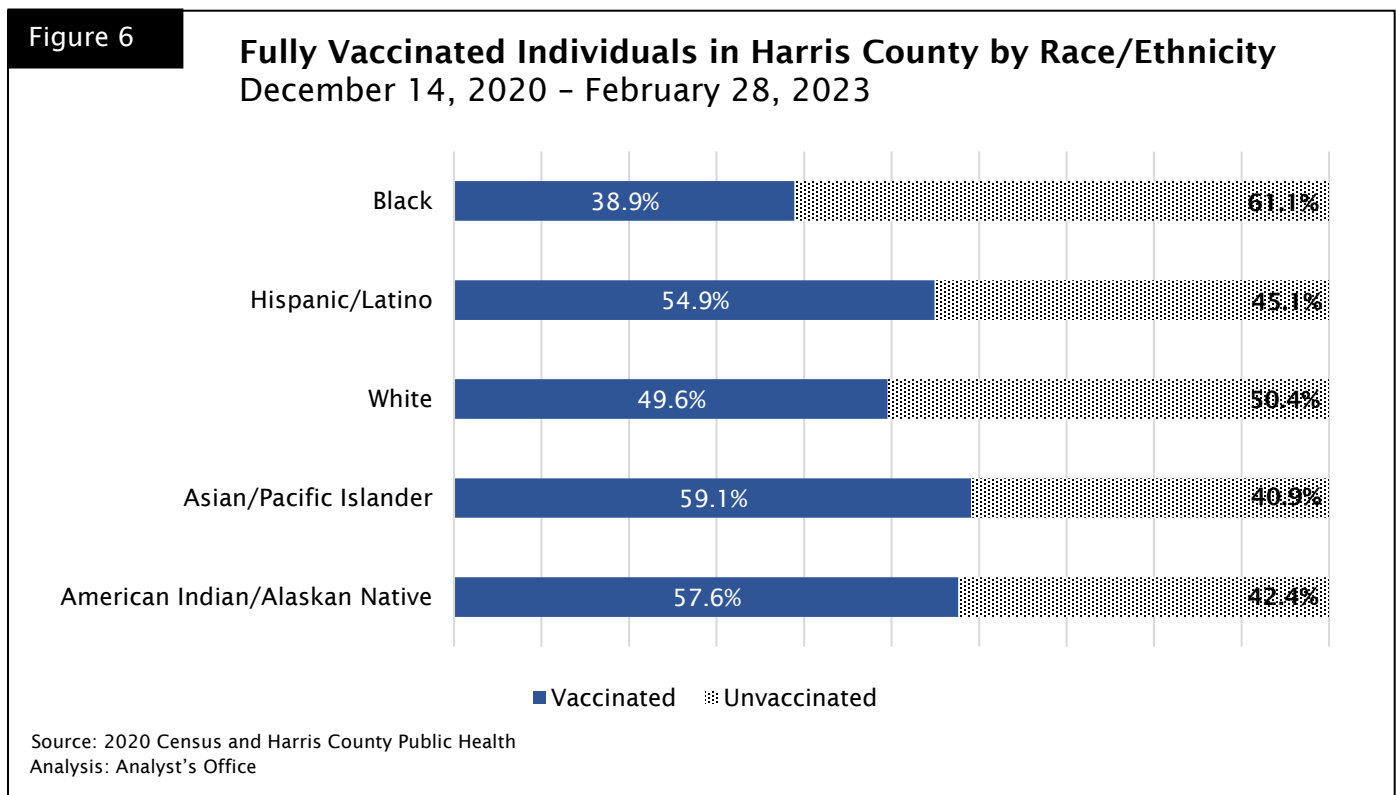
^{xxvii} In April 2022, DSHS experienced large-scale corrections from providers to patient profiles stored in the ImmTrac2 system, including corrections to patient race and ethnicity. The corrections by DSHS impacted race and ethnicity data reported in this memo.

As shown in **Figure 5**, for individuals fully vaccinated in Harris County, the demographic with the highest percentage of individuals vaccinated are individuals who identify as Hispanic ages 65-74 (85%). The demographic with the lowest percentage of individuals vaccinated are individuals who identify as American Indian/Alaskan Native ages 0-4 (2%).

PERCENTAGE OF FULLY VACCINATED INDIVIDUALS BY RACE AND ETHNICITY

Figure 6, and **Table 4**, which follows, reflect the percentage of individuals in Harris County who are fully vaccinated by all providers in Harris County by race and ethnicity.^{xxviii xxix xxx}

Each bar for each race or ethnicity group represents the race or ethnicity group's total population within Harris County's population and reflects the percentage of individuals in each race and ethnicity group vaccinated.



As shown in **Figure 6**, individuals who identify as Black in Harris County have the smallest vaccinated population at 38.9%, followed by individuals who identify as White at 49.6%.

^{xxviii} Note: Prior to February 4, 2021, providers were not required to report race and ethnicity when reporting doses to the Texas Department of State Health Services (DSHS) because vaccine recipients are allowed to decline disclosing their race and ethnicity to a provider.

^{xxix} In April 2022, DSHS experienced large-scale corrections from providers to patient profiles stored in the ImmTrac2 system, including corrections to patient race and ethnicity. The corrections by DSHS impacted race and ethnicity data reported in this memo. As a result, the number of individuals retroactively identified as "multi-racial" continues to increase as DSHS continues to update their patient profiles.

^{xxx} The number of vaccinated individuals identifying as Other/Unknown and Multi-racial reported by DSHS for Harris County exceed the population totals for the two groups reported in the 2020 Census, resulting in percentages vaccinated that exceed 100%. Because of this issue, these two groups have been excluded from the analysis.

FULLY VACCINATED INDIVIDUALS BY RACE AND ETHNICITY

Table 4 reflects the race and ethnicity of individuals in Harris County who are fully vaccinated by all providers in Harris County.^{xxxxi xxxii} For context, **Table 4** also includes the percentage of Harris County's total population by race and ethnicity.

Previous versions of this table in past memos reflected the total number of individuals by race and ethnicity fully vaccinated as a percentage of all individuals vaccinated—this version of the table shows the percentage vaccinated within a given race or ethnicity.

Table 4 Fully Vaccinated Individuals in Harris County by Race/Ethnicity December 14, 2020 – February 28, 2023			
Race/Ethnicity	Number of Individuals Vaccinated	Percentage of Race/Ethnicity Group Vaccinated ^{xxxiii}	Percentage of Total Population
Black	344,734	38.9%	18.7%
Hispanic/Latino	1,117,978	54.9%	43.0%
White	649,147	49.6%	27.7%
Asian American/ Pacific Islander	205,631	59.1%	7.4%
American Indian/ Alaskan Native	4,861	57.6%	0.2%
Multi-Racial	486,446	NA	2.6%
Other/Unknown	229,051	NA	0.5%

Source: 2020 Census and Harris County Public Health
Analysis: Analyst's Office

As shown in **Table 4**:

- 38.9% (344,734) of individuals who identify as Black are fully vaccinated;
- 54.9% (1,117,978) of individuals who identify as Hispanic/Latino are fully vaccinated;
- 49.6% (649,147) of individuals who identify as White are fully vaccinated;
- 59.1% (205,631) of individuals who identify as Asian American/Pacific Islander are fully vaccinated; and,
- 57.6% (4,861) of individuals who identify as American Indian/Alaskan Native are fully vaccinated.

^{xxxxi} Note: Prior to February 4, 2021, providers were not required to report race/ethnicity when reporting doses to Texas Department of State Health Services (DSHS) because vaccine recipients are allowed to decline disclosing their race/ethnicity to a provider.

^{xxxii} In April 2022, DSHS experienced large-scale corrections from providers to patient profiles stored in the ImmTrac2 system, including corrections to patient race and ethnicity. The corrections by DSHS impacted race and ethnicity data reported in this memo.

^{xxxiii} Note: The percentage of Harris County's total race and ethnicity group population that is vaccinated for Other/Unknown and Multi-racial is unavailable because there are more vaccinated individuals identifying as Multi-racial and Other/Unknown than the total population estimate of both groups in Harris County's 2020 Census data.

INDIVIDUALS FULLY VACCINATED BY RACE AND ETHNICITY AND COMMISSIONER PRECINCT

Table 5 reflects the race and ethnicity of individuals in Harris County who are fully vaccinated by providers in Harris County by commissioner precinct.^{xxxiv xxxv} For context, **Table 5** also includes the percentage of each commissioner precinct's total population by race and ethnicity.

Table 5 Fully Vaccinated Individuals in Harris County by Race/Ethnicity, By Commissioner Precinct December 14, 2020 - February 28, 2023			
Race/Ethnicity	Number of Individuals Vaccinated	Percentage of Precinct's Vaccinated Population	Percentage of Total Precinct Population
Precinct 1			
Black	149,168	20.9%	33.4%
Hispanic/Latino	261,102	36.6%	37.3%
White	100,892	14.1%	19.8%
Asian Am./Pacific Islander	40,097	5.6%	6.4%
Am. Indian/Alaskan Native	1,067	0.1%	0.1%
Multi-racial	111,730	15.6%	2.4%
Other/Unknown	50,184	7.0%	0.5%
Precinct 2			
Black	36,272	5.8%	10.2%
Hispanic/Latino	322,972	51.7%	63.6%
White	125,492	20.1%	20.3%
Asian Am./Pacific Islander	21,884	3.5%	3.6%
Am. Indian/Alaskan Native	793	0.1%	0.2%
Multi-racial	73,939	11.8%	1.7%
Other/Unknown	42,787	6.9%	0.4%
Precinct 3			
Black	77,938	9.1%	13.8%
Hispanic/Latino	270,459	31.5%	28.6%
White	204,046	23.8%	45.0%
Asian Am./Pacific Islander	84,425	9.8%	8.4%
Am. Indian/Alaskan Native	1,565	0.2%	0.2%
Multi-racial	158,890	18.5%	3.6%
Other/Unknown	60,093	7.0%	0.5%
Precinct 4			
Black	75,178	9.6%	17.4%
Hispanic/Latino	250,641	32.0%	42.4%
White	208,854	26.7%	25.7%
Asian Am./Pacific Islander	54,976	7.0%	11.0%
Am. Indian/Alaskan Native	1,339	0.2%	0.2%
Multi-racial	135,570	17.3%	2.6%
Other/Unknown	55,494	7.1%	0.7%

Sources: 2020 Census, Harris County Public Health, and Harris County Office of Management and Budget

^{xxxiv} Commissioner precinct boundaries used reflect boundaries effective November 3, 2021.

^{xxxv} In April 2022, DSHS experienced large-scale corrections from providers to patient profiles stored in the ImmTrac2 system, including corrections to patient race and ethnicity. The corrections by DSHS impacted race and ethnicity data reported in this memo.

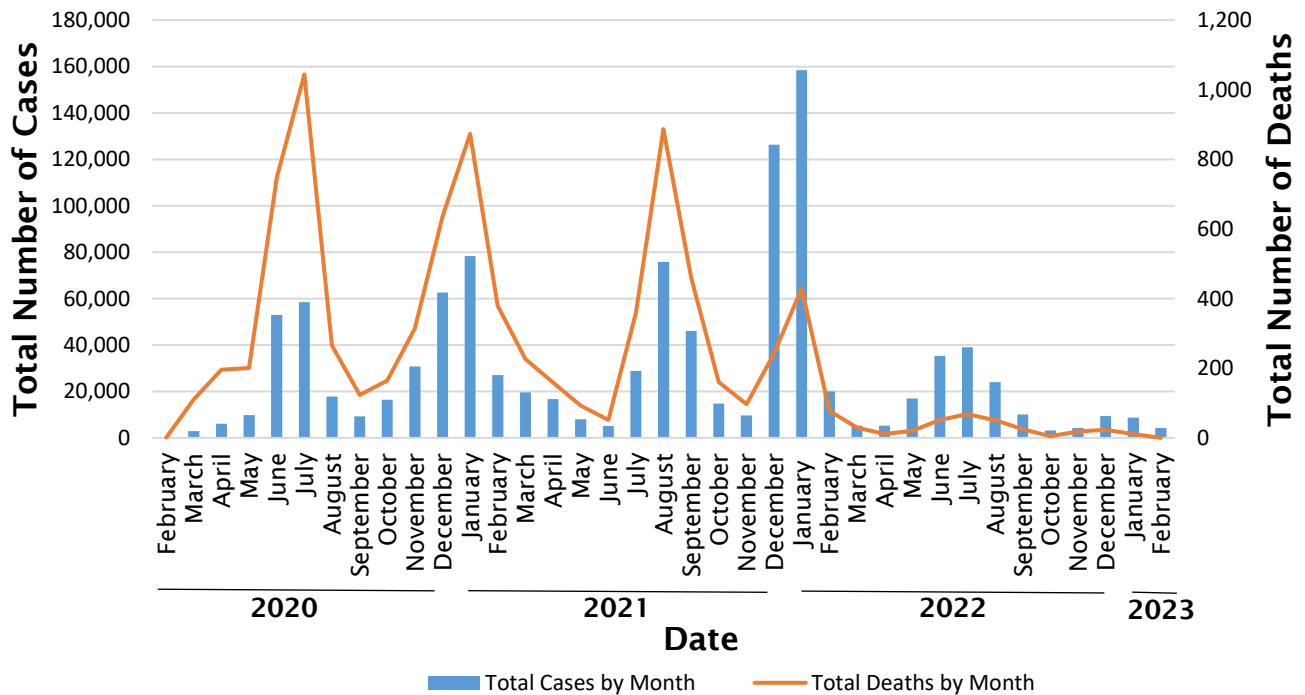
COVID-19 CASES AND DEATHS IN HARRIS COUNTY

Figure 7 represents both COVID-19 cases and COVID-19-related deaths in Harris County from February 1, 2020, through February 28, 2023.

Figure 7 captures the COVID-19 surges in Harris County in summer 2020, winter 2020-2021, summer 2021, and winter 2021-2022, with the highest number of unique cases in January 2022 at 158,437.

Figure 7

COVID-19 Cases and Deaths in Harris County February 1, 2020 - February 28, 2023



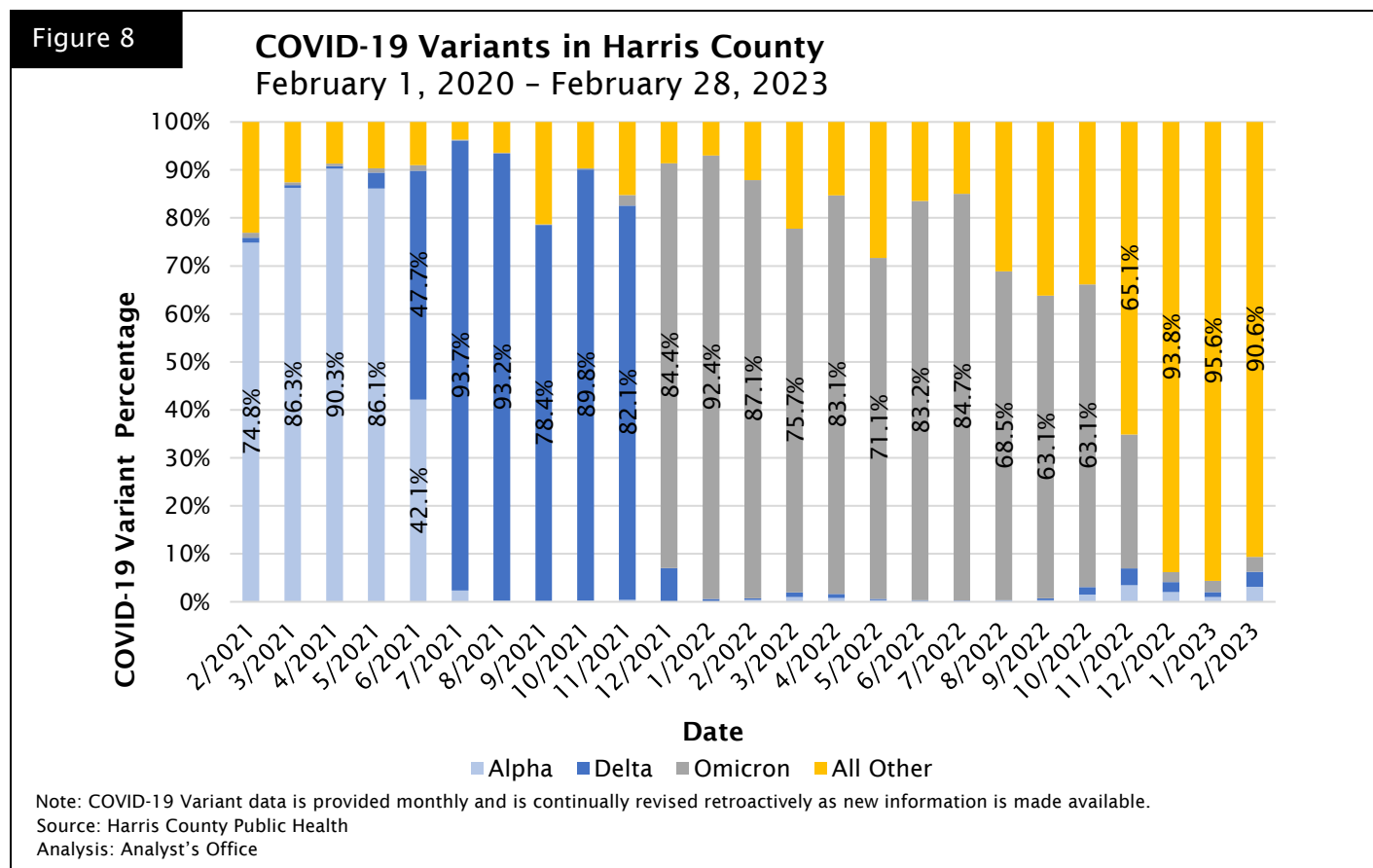
Note: COVID-19 Cases and death figures are provided monthly and are continually revised retroactively as new information is made available.
Source: Harris County Public Health
Analysis: Analyst's Office

COVID-19 VARIANTS IN HARRIS COUNTY BASED ON TESTING

Figure 8 represents the prevalence of different variants of the COVID-19 virus in Harris County from February 1, 2021, through February 28, 2023.^{xxxxvi} According to Harris County Public Health (HCPH), data regarding COVID-19 variants prior to February 2021 is unavailable. As data regarding COVID-19 variants is not shared between the health entities that have jurisdiction over various parts of Harris County, **Figure 8** only presents data collected from the parts of Harris County within the HCPH jurisdiction.

Figure 8 captures the initial surge of the Alpha variant beginning in early 2021, which was followed and replaced by the surge in the Delta variant during the summer of 2021, and then the Omicron variant during the winter of 2021-2022.

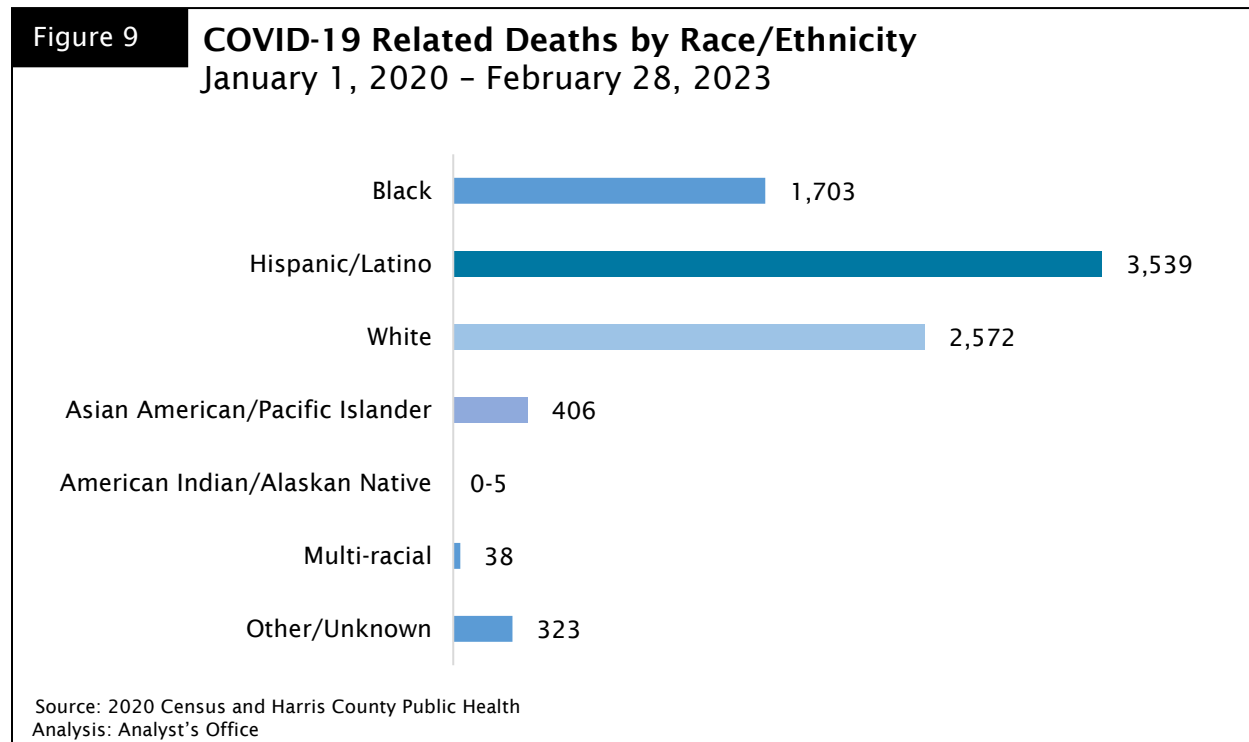
Of note, testing for COVID-19 variants is voluntary for test providers. In addition, sampling methodology and variant sequencing protocols differ between test providers, leading to an overall small sample size. HCPH states that due to the sufficiently small sample size, the data presented can only be used to deduce overall trends regarding the prevalence of COVID-19 variants.



^{xxxxvi} Note: Due to privacy regulations, case counts below five are reported as 0-5. For the purposes of the visual analyses, case counts reported as 0-5 are calculated as three.

COVID-19 RELATED DEATHS BY RACE AND ETHNICITY

Figure 9 reflects the total number of confirmed COVID-19-related deaths in Harris County by race and ethnicity.^{xxxvii}



Of the 8,584 individuals in Harris County who died of a COVID-19-related death between January 1, 2020, and February 28, 2023:^{xxxviii}

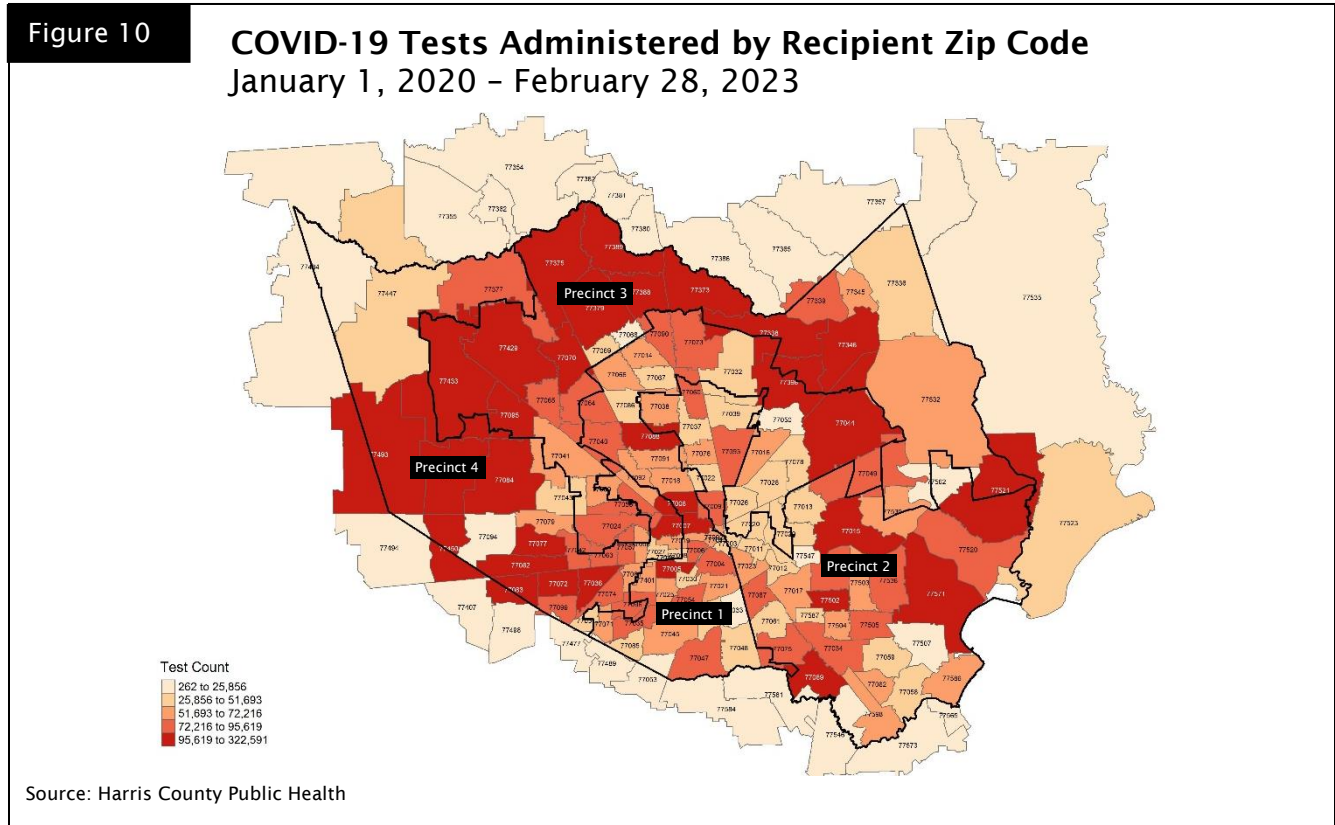
- **19.8% (1,703) identified as Black**, and for context, 18.7% of County residents identify as Black;
- **41.1% (3,539) identified as Hispanic/Latino**, and for context, 43.0% of County residents identify as Hispanic;
- **29.9% (2,572) identified as White**, and for context, 27.7% of County residents identify as White;
- **4.7% (406) identified as Asian or Pacific Islander**, and for context, 7.4% of County residents identify as Asian, Pacific Islander, or Native Hawaiian;
- **0.1% (0-5) identified as American Indian or Alaskan Native**, and for context, 0.2% of County residents identify as American Indian or Alaskan Native;
- **0.4% (38) identified as Multi-racial**, and for context, 2.6% of County residents identify as Two or More Races; and,
- **3.7% (323) were recorded as Other/Unknown race and ethnicity.**

^{xxxvii} Race and ethnicity totals do not sum to Total Precinct Deaths because 32 deaths do not have race and ethnicity data available.

^{xxxviii} County-level race and ethnicity data are derived from the 2020 Census population estimates.

COVID-19 TESTS BY ZIP CODE

Figure 10 reflects the total number of COVID-19 polymerase chain reaction (PCR) tests administered to Harris County residents by all providers in Harris County by zip code, and **Table 6** reflects the number of COVID-19 PCR tests administered by the commissioner precinct.^{xxxix xl}



Between January 1, 2020, and February 28, 2023, providers in Harris County **administered 11,368,191 COVID-19 tests**. For a full list of tests administered by recipient zip code, see **Appendix A**.^{xli}

Table 6

COVID-19 Tests Administered, by Commissioner Precinct and for Harris County, January 1, 2020 – February 28, 2023

Precinct 1	Precinct 2	Precinct 3	Precinct 4	Total Tests
2,521,836	2,483,169	2,681,066	2,410,291	11,368,191

^{xxxix} PCR refers to the polymerase chain reaction tests commonly used to test for COVID-19.

^{xl} Commissioner precinct boundaries used reflect boundaries effective November 3, 2021.

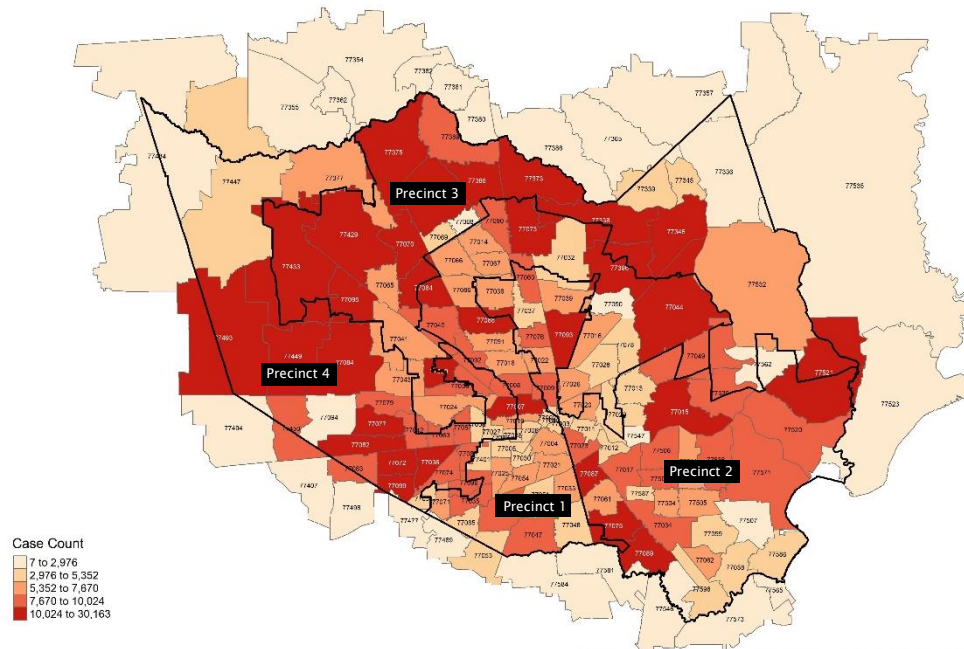
^{xli} Precinct totals do not sum to Total Tests because 1,271,829 tests administered have addresses that cannot be geo-coded into a Precinct.

CONFIRMED POSITIVE COVID-19 CASES BY ZIP CODE

Figure 11 reflects the total number of COVID-19 positive cases confirmed by a PCR test in Harris County, reported by zip code, and **Table 7** reflects the number of positive COVID-19 cases by commissioner precinct.^{xlii xliii}

Figure 11

Confirmed Positive COVID-19 Cases by Zip Code January 1, 2020 – February 28, 2023



Source: Harris County Public Health

Between January 1, 2020, and February 28, 2023, there were **1,003,077 confirmed positive cases of COVID-19** in Harris County. For a full list of positive cases by zip code, see **Appendix B**.^{xliv}

Table 7

Confirmed Positive Cases by Commissioner Precinct and for Harris County, January 1, 2020 – February 28, 2023

Precinct 1		Precinct 2		Precinct 3		Precinct 4		County	
Number of Cases	% of Precinct Population	Number of Cases	% of Precinct Population	Number of Cases	% of Precinct Population	Number of Cases	% of Precinct Population	Number of Cases	% of County Population
263,299	22.3%	268,837	22.7%	216,265	18.4%	247,598	20.8%	1,003,077	21.2%

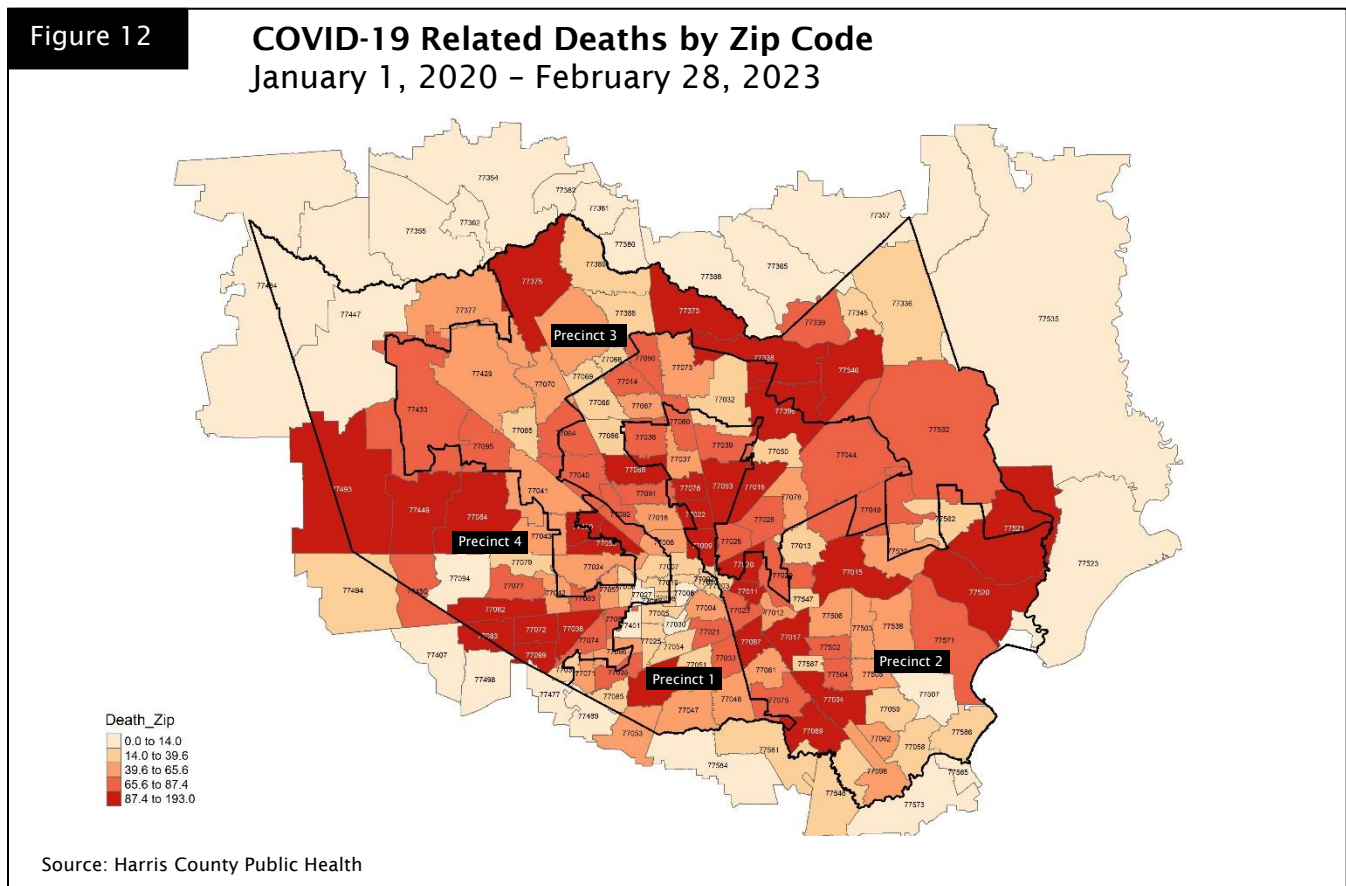
^{xlii} PCR refers to the polymerase chain reaction tests commonly used to test for COVID-19.

^{xliii} Commissioner precinct boundaries used reflect boundaries effective November 3, 2021.

^{xliv} Precinct totals do not sum to Total Positive Cases because 7,078 confirmed positive cases have addresses that cannot be geo-coded into a Precinct.

CONFIRMED COVID-19 RELATED DEATHS BY ZIP CODE

Figure 12 reflects the total number of confirmed COVID-19-related deaths in Harris County by zip code, and **Table 8** reflects the number of COVID-19-related deaths by commissioner precinct.^{xliv}



Between January 1, 2020, and February 28, 2023, there were **8,616 confirmed COVID-19-related deaths** in Harris County. For a full list of deaths by zip code, see **Appendix C**.^{xlvi}

Table 8

COVID-19 Related Deaths by Commissioner Precinct and for Harris County, January 1, 2020 – February 28, 2023									
Precinct 1		Precinct 2		Precinct 3		Precinct 4		County Total	
Number of Deaths	% of Precinct Population	Number of Deaths	% of Precinct Population	Number of Deaths	% of Precinct Population	Number of Deaths	% of Precinct Population	Number of Deaths	% of County Population
2,211	0.19%	2,791	0.24%	1,181	0.10%	2,342	0.20%	8,616	0.18%

^{xliv} Commissioner precinct boundaries used reflect boundaries effective November 3, 2021.

^{xlvi} Precinct totals do not sum to Total Deaths because 91 deaths have addresses that cannot be geo-coded into a precinct.

APPENDIX A

Total COVID-19 Tests Administered by Zip Code Ordered by Tests Administered, January 1, 2020 – February 28, 2023							
Zip Code	Tests Administered	Zip Code	Tests Administered	Zip Code	Tests Administered	Zip Code	Tests Administered
77565	262	77028	34,951	77081	65,946	77064	93,415
77362	323	77085	35,331	77041	66,630	77536	94,500
77382	345	77069	35,730	77503	67,304	77339	95,571
77381	357	77058	36,414	77598	68,966	77015	95,691
77380	595	77051	37,658	77532	69,339	77008	96,869
77354	896	77032	37,793	77504	69,835	77571	97,665
77355	1,240	77011	38,809	77045	70,281	77502	99,366
77535	1,517	77587	39,840	77530	70,579	77072	100,047
77477	1,536	77098	41,587	77079	70,775	77088	100,586
77386	1,611	77059	42,017	77080	71,292	77389	101,742
77489	1,906	77026	43,956	77002	71,400	77044	103,139
77357	1,973	77027	44,393	77025	72,082	77070	104,167
77498	2,034	77048	46,392	77065	72,249	77007	112,283
77507	2,093	77447	46,536	77035	72,514	77036	112,757
77581	2,108	77061	46,798	77047	72,626	77388	113,381
77010	2,426	77086	47,409	77006	72,806	77082	115,797
77365	2,852	77067	47,424	77034	73,164	77338	123,937
77573	3,345	77043	47,440	77060	73,506	77089	124,721
77584	3,400	77020	47,965	77505	74,125	77077	133,068
77053	3,650	77039	50,180	77087	74,320	77521	137,676
77046	4,455	77030	51,460	77049	76,251	77083	141,784
77407	5,174	77022	51,527	77520	76,492	77373	142,143
77494	5,502	77062	52,358	77074	77,340	77450	159,038
77546	7,245	77076	53,660	77096	78,969	77375	160,531
77050	8,085	77038	54,728	77057	79,295	77396	170,557
77033	18,751	77014	56,124	77073	79,513	77346	176,276
77562	19,643	77345	56,300	77093	79,533	77005	177,687
77094	19,701	77071	57,899	77090	79,771	77095	180,531
77547	20,974	77023	58,183	77042	79,805	77379	192,753
77068	21,810	77091	58,521	77040	81,769	77084	206,029
77484	24,728	77021	58,768	77004	82,731	77429	214,595
77336	26,608	77586	59,317	77075	82,837	77433	260,484
77031	26,926	77066	59,900	77506	83,875	77449	322,591
77013	28,083	77092	60,236	77063	86,766		
77078	28,706	77401	60,314	77054	87,011		
77037	29,783	77056	60,854	77099	89,046		
77003	31,035	77016	61,553	77377	89,809		
77523	31,989	77018	62,272	77024	91,057		
77012	33,524	77017	65,659	77009	91,088		
77029	34,149	77019	65,704	77055	91,991		

APPENDIX B

Total COVID-19 Confirmed Positive Cases by Zip Code Ordered by Positive Cases, January 1, 2020 – February 28, 2023							
Zip Code	Positive Cases	Zip Code	Positive Cases	Zip Code	Positive Cases	Zip Code	Positive Cases
77565	7	77013	3,718	77018	6,547	77060	9,614
77362	7	77058	3,763	77020	6,690	77040	9,658
77382	7	77078	3,829	77004	6,779	77055	9,771
77355	10	77069	3,969	77532	6,860	77009	9,834
77381	15	77027	4,020	77066	6,963	77502	9,931
77354	18	77587	4,073	77033	6,992	77034	9,978
77535	21	77051	4,346	77091	7,050	77087	10,093
77573	33	77032	4,470	77038	7,211	77080	10,115
77357	42	77029	4,594	77377	7,302	77064	10,184
77380	49	77037	4,608	77022	7,354	77073	10,393
77386	74	77002	4,641	77024	7,435	77388	10,641
77498	104	77586	4,675	77065	7,452	77338	10,666
77010	132	77028	4,681	77041	7,575	77007	10,865
77507	150	77053	4,794	77016	7,636	77075	11,251
77365	153	77056	4,866	77096	7,678	77082	11,592
77407	167	77085	5,144	77079	7,750	77099	11,640
77584	184	77005	5,160	77530	7,825	77070	11,687
77581	261	77006	5,197	77023	7,826	77093	11,859
77523	274	77339	5,245	77035	8,122	77072	12,291
77046	414	77012	5,252	77506	8,123	77015	12,755
77484	564	77048	5,296	77092	8,143	77077	12,900
77477	687	77598	5,306	77536	8,150	77088	12,910
77050	940	77011	5,327	77047	8,162	77521	12,919
77094	1,704	77019	5,452	77057	8,281	77044	13,384
77494	1,923	77504	5,532	77076	8,389	77375	13,599
77562	2,006	77061	5,540	77571	8,459	77036	14,208
77489	2,147	77505	5,634	77520	8,484	77373	14,247
77336	2,254	77062	5,692	77049	8,498	77396	14,696
77068	2,372	77054	5,714	77063	8,654	77089	14,715
77547	2,398	77026	5,740	77008	8,788	77095	14,979
77546	2,891	77025	6,015	77017	8,822	77346	15,817
77003	3,032	77043	6,031	77042	8,868	77379	16,835
77401	3,164	77503	6,133	77081	9,035	77429	17,643
77447	3,259	77014	6,210	77074	9,036	77433	21,615
77030	3,420	77086	6,254	77389	9,040	77084	25,442
77098	3,433	77021	6,270	77083	9,135	77449	30,163
77031	3,463	77067	6,325	77045	9,198		
77345	3,568	77071	6,403	77450	9,224		
77059	3,642	77039	6,456	77090	9,376		

APPENDIX C

Total Confirmed COVID-19 Related Deaths by Zip Code Ordered by Number of Deaths, January 1, 2020 – February 28, 2023							
Zip Code	COVID Deaths	Zip Code	COVID Deaths	Zip Code	COVID Deaths	Zip Code	COVID Deaths
77565	0-5	77345	26	77057	51	77026	86
77362	0-5	77002	26	77536	52	77033	86
77382	0-5	77586	26	77073	52	77023	86
77355	0-5	77562	27	77053	53	77063	87
77381	0-5	77336	27	77067	53	77074	87
77354	0-5	77547	27	77506	54	77060	87
77535	0-5	77056	27	77047	55	77011	88
77573	0-5	77025	28	77429	55	77373	88
77357	0-5	77079	28	77043	58	77034	92
77380	0-5	77389	28	77379	58	77396	92
77386	0-5	77031	30	77061	61	77083	93
77498	0-5	77065	31	77503	61	77375	97
77010	0-5	77003	32	77070	61	77045	98
77507	0-5	77013	32	77012	64	77346	98
77365	0-5	77546	33	77039	66	77017	101
77407	0-5	77058	33	77014	67	77015	103
77584	0-5	77085	33	77044	67	77076	105
77523	0-5	77587	34	77038	68	77009	106
77046	0-5	77388	34	77081	68	77099	106
77484	0-5	77086	38	77433	68	77020	107
77094	0-5	77051	39	77028	69	77080	108
77477	6	77032	39	77021	69	77082	109
77447	8	77066	39	77571	70	77084	117
77489	9	77048	42	77029	71	77016	119
77006	11	77018	43	77450	73	77521	119
77030	12	77377	43	77502	73	77022	122
77027	12	77505	44	77090	74	77055	122
77401	13	77042	44	77504	76	77093	130
77581	14	77096	45	77532	76	77338	132
77098	14	77530	45	77092	76	77520	136
77059	14	77008	45	77077	76	77087	136
77019	14	77078	46	77035	77	77089	136
77050	15	77071	47	77339	78	77036	138
77068	16	77004	47	77049	78	77088	148
77005	17	77041	47	77064	80	77072	153
77054	18	77062	48	77095	81	77449	193
77069	22	77024	48	77091	82		
77494	24	77037	49	77040	84		
77007	25	77598	49	77075	84		

APPENDIX D

Number of Individuals Per 100,000 Residents Fully Vaccinated and Social Vulnerability Index (SVI), Ordered by Residents Vaccinated, December 14, 2020 – February 28, 2023^{xlvi}

Zip Code	Per 100k Rate	SVI	Zip Code	Per 100k Rate	SVI	Zip Code	Per 100k Rate	SVI	Zip Code	Per 100k Rate	SVI
77336	40,385	0.30	77373	56,599	0.30	77505	63,056	0.24	77054	70,186	0.26
77090	44,874	0.70	77048	56,711	0.85	77429	63,084	0.06	77096	70,454	0.39
77532	46,129	0.37	77080	57,232	0.83	77447	63,219	0.45	77003	70,484	0.61
77562	46,383	0.63	77074	57,404	0.86	77015	63,322	0.76	77057	70,834	0.34
77004	49,117	0.53	77061	57,598	0.70	77069	63,473	0.22	77079	72,290	0.27
77520	49,649	0.82	77034	57,944	0.67	77377	64,057	0.24	77041	72,346	0.31
77050	51,103	0.71	77051	58,007	0.80	77375	64,416	0.45	77389	73,293	0.14
77067	51,341	0.79	77338	58,361	0.58	77066	64,564	0.59	77009	73,818	0.62
77530	51,395	0.59	77086	58,378	0.78	77095	64,679	0.23	77094	73,855	NA
77521	51,665	0.64	77088	58,380	0.77	77084	64,784	0.36	77018	75,150	0.48
77503	52,173	0.82	77049	58,399	0.63	77449	64,825	0.36	77083	76,034	0.53
77060	52,662	0.94	77502	58,801	0.89	77433	65,057	0.11	77006	78,292	0.09
77571	53,042	0.38	77035	58,814	0.74	77379	65,323	0.21	77025	79,018	0.32
77013	53,415	0.98	77044	59,007	0.41	77082	65,569	0.54	77002	80,691	0.42
77536	54,264	0.44	77016	59,098	0.89	77017	65,722	0.66	77008	82,838	0.08
77039	54,544	0.73	77586	59,697	0.18	77064	66,775	0.47	77059	84,933	0.05
77036	54,702	0.93	77020	59,909	0.89	77450	66,915	0.18	77007	85,568	0.01
77026	54,750	0.94	77075	60,075	0.61	77087	66,929	1.00	77005	86,084	0.03
77598	54,776	0.57	77033	60,093	0.93	77099	67,465	0.80	77498	86,111	0.33
77506	54,873	0.95	77587	60,281	0.91	77345	67,602	0.05	77032	89,058	0.99
77091	55,052	0.92	77038	60,593	0.50	77023	67,615	0.76	77401	95,133	0.03
77014	55,634	0.78	77022	60,869	0.97	77055	67,749	0.68	77019	98,379	0.09
77021	55,655	0.74	77068	61,296	0.43	77045	67,761	0.84	77098	99,326	0.07
77073	55,729	0.50	77070	61,345	0.49	77071	68,308	0.68	77027	115,255	0.01
77093	55,759	0.97	77047	61,690	0.55	77043	68,315	0.52	77010	124,236	0.02
77028	55,939	0.84	77031	61,706	0.64	77085	68,359	0.60	77030	132,834	0.28
77037	56,045	0.69	77065	62,108	0.43	77077	68,368	0.29	77024	135,234	0.16
77076	56,066	0.86	77058	62,185	0.46	77029	68,368	0.88	77056	156,341	0.14
77078	56,182	0.89	77042	62,231	0.38	77011	68,574	0.96	77507	190,000	NA
77547	56,217	0.66	77346	62,297	0.12	77072	68,625	0.87	77523	199,718	0.26
77396	56,491	0.51	77040	62,469	0.55	77062	69,203	0.19	77046	201,034	0.10
77053	56,492	0.72	77012	62,746	0.99	77092	69,386	0.75			
77504	56,504	0.88	77063	62,867	0.57	77089	69,410	0.47			
77081	56,581	0.81	77388	62,909	0.13	77339	69,848	0.32			

^{xlvi} Table excludes data for zip codes with unavailable population and vaccination data.

ENDNOTES

- ¹ Email communication received from David Walker, Data Analyst IV, Texas Department of State Health Services on 5.11.2022.
- ² Email communication received from David Walker, Data Analyst IV, Texas Department of State Health Services on 5.11.2022.
- ³ Email communication received from Merine Johnson, Data Analyst, Harris County Public Health on February 7, 2023.
- ⁴ *FDA Authorizes Pfizer-BioNTech COVID-19 Vaccine for Emergency Use in Children 5 through 11 Years of Age*. (2021, October 29). US Food and Drug Administration. Retrieved April 19, 2022 from <https://www.fda.gov/news-events/press-announcements/fda-authorizes-pfizer-biontech-covid-19-vaccine-emergency-use-children-5-through-11-years-age>
- ⁵ *Coronavirus (COVID-19) Update: FDA Takes Key Action by Approving Second COVID-19 Vaccine*. (2022, January 31). US Food and Drug Administration. Retrieved April 19, 2022 from <https://www.fda.gov/news-events/press-announcements/coronavirus-covid-19-update-fda-takes-key-action-approving-second-covid-19-vaccine>
- ⁶ Commissioner, O. of the. (2022, June 17). *Coronavirus (COVID-19) Update: FDA Authorizes Moderna and Pfizer-BioNTech COVID-19 Vaccines for Children Down to 6 Months of Age*. FDA; FDA. <https://www.fda.gov/news-events/press-announcements/coronavirus-covid-19-update-fda-authorizes-moderna-and-pfizer-biontech-covid-19-vaccines-children>
- ⁷ Commissioner, O. of the. (2022, July 13). *Coronavirus (COVID-19) Update: FDA Authorizes Emergency Use of Novavax COVID-19 Vaccine, Adjuvanted*. FDA; FDA. <https://www.fda.gov/news-events/press-announcements/coronavirus-covid-19-update-fda-authorizes-emergency-use-novavax-covid-19-vaccine-adjuvanted>
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- ⁹ *Ready Harris*. (n.d.). Retrieved September 8, 2021, from <https://www.readyharris.org/COVID-19-Incentive-Program>
- ¹⁰ *Houston Health Department to provide up to \$150 in gift cards for COVID-19 vaccinations*. (n.d.). Retrieved September 8, 2021, from <https://www.houstontx.gov/health/NewsReleases/houston-health-department-to-provide-up-to-150-in-gift-cards-for-covid-19-vaccinations.html>
- ¹¹ CDC. (2022, July 20). *Frequently Asked Questions about COVID-19 Vaccination*. Centers for Disease Control and Prevention. <https://www.cdc.gov/coronavirus/2019-ncov/vaccines/faq.html>
- ¹² CDC. (2022, August 23). *COVID-19 Vaccination*. Centers for Disease Control and Prevention. <https://www.cdc.gov/coronavirus/2019-ncov/vaccines/stay-up-to-date.html>
- ¹³ *FDA Authorizes Additional Vaccine Dose for Certain Immunocompromised Individuals*. (August 12, 2021). US Food and Drug Administration. Retrieved August 30, 2021 from <https://www.fda.gov/news-events/press-announcements/coronavirus-covid-19-update-fda-authorizes-additional-vaccine-dose-certain-immunocompromised>
- ¹⁴ *FDA Authorizes Booster Dose of Pfizer-BioNTech COVID-19 Vaccine for Certain Populations*. (September 22, 2021). US Food and Drug Administration. Retrieved October 28, 2021 from <https://www.fda.gov/news-events/press-announcements/fda-authorizes-booster-dose-pfizer-biontech-covid-19-vaccine-certain-populations>
- ¹⁵ *Coronavirus (COVID-19) Update: FDA Takes Additional Actions on the Use of a Booster Dose for COVID-19 Vaccines*. (October 20, 2021). US Food and Drug Administration. Retrieved October 28, 2021 from <https://www.fda.gov/news-events/press-announcements/coronavirus-covid-19-update-fda-takes-additional-actions-use-booster-dose-covid-19-vaccines>
- ¹⁶ *Coronavirus (COVID-19) Update: FDA Expands Eligibility for COVID-19 Vaccine Boosters*. (2021, November 19). US Food and Drug Administration. Retrieved April 19, 2022 from <https://www.fda.gov/news-events/press-announcements/coronavirus-covid-19-update-fda-expands-eligibility-covid-19-vaccine-boosters>
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- ²⁴ *FDA Authorizes Pfizer-BioNTech COVID-19 Vaccine for Emergency Use in Children 5 through 11 Years of Age*. (2021, October 29). US Food and Drug Administration. Retrieved on April 19, 2022 from <https://www.fda.gov/news-events/press-announcements/fda-authorizes-pfizer-biontech-covid-19-vaccine-emergency-use-children-5-through-11-years-age>



The Harris County Commissioners Court's Analyst's Office provides the Harris County Commissioners Court members with objective, nonpartisan, and timely fiscal and policy analysis related to the efficiency and effectiveness of various County operations.

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